

# Happy Living on a Woonerf

A mixed-method study on the possible impact of living on a woonerf upon subjective well-being in the city of Groningen.



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## **Abstract**

This research aims to find out whether living on a woonerf influences subjective well-being in the city of Groningen. This research is conducted using a mixed-method approach, both quantitative and qualitative research. The quantitative research contained a questionnaire, spread over households in the Hortusbuurt. The variables were chosen based on existing literature and used in an ordinal logistic regression. The findings show that contact with street residents, as well as the number of household members and residence satisfaction, influences happiness. Education and housing characteristics influence happiness too but to a smaller extent. Qualitative research shows a higher relation between the effect of greenery, traffic and social contact on happiness which follows the existing literature. Living in a street with greenery, less traffic and more social contact leads to higher SWB and therefore, there can be assumed that people on a woonerf are happier. However, further research is needed, and the suggestion is to expand the scale and add multiple and more precise questions on each variable.

**Keywords:** woonerfs, residential area, liveability, happiness, subjective well-being, traffic, greenery, social cohesion

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# 1. Introduction

## 1.1 Background

Proper use of residential neighbourhoods is, and therefore it is important to have a good balance between access and leisure time. Residential areas need to be both accessible and a place for rest for the residents (Guttenberg, 1982). The concept of the ‘woonerf’ takes both concepts into account. It is a Dutch idea that has been widely applied in the Netherlands since 1976. Currently, more than 1.25 million houses are located at a woonerf, which is almost 20% of all residential properties in the Netherlands (Woonerven, 2013; Mensenstraat, 2021).

Niek de Boer was a Professor in Urban Planning and in the late 1960s he developed the concept of ‘woonerf’. He designed a street in which drivers felt that they were driving through a garden. Colin Buchanan, planner and writer of the book ‘Traffic in Towns’ inspired Niek de Boer. He stated that there was a relationship between traffic flow and urban and residential street scene degradation (Ben-Joseph). In 1969, the municipality of Delft decided to implement the idea of a woonerf in neighbourhoods classified as low-income neighbourhoods. The woonerf concept was very successful and soon after, multiple municipalities in the Netherlands, and also countries all over the world, decided to implement it too (Ben-Joseph, 1995). In 1976, the Dutch government accepted the concept of a woonerf and gave it a legal status (Ben-Joseph, 1995; Mensenstraat, 2021).

A woonerf can be translated in English as a ‘living or residential yard’ and is both a residential street and public space. The entrances are marked, it is paved, there are visible and physical barriers and street furniture, and landscaping is being accommodated (Steinberg, 2015). Woonerfs have a small-scale structure that stimulates social contacts with for example neighbours (Eenink, 2007).

Kraay (1986) and Ben-Joseph (1995), define a woonerf as an open paved area with public traffic, but also traffic regulations. The entrance of the woonerf is marked with a blue traffic sign which is visible at the entrance. A woonerf is a residential area but is also a public space and the woonerf can be a single street or square, but multiple streets and squares can also be connected. Pedestrians and playing children are allowed everywhere on the woonerf. It is not the intention that the area is mostly being used by vehicle drivers. However, they can still access the area, which causes traffic to intermingle. The pavements are not conventional or straight, mainly because of barriers to reduce car speeds to protect the playing children and the pedestrians.

A woonerf is a zone where traffic safety is ensured so the primary residential function is maintained (Eenink, 2007). The Dutch government developed the following regulations and traffic rules for woonerfs to ensure traffic safety. Pedestrians can use the street across the full width; Drivers are not allowed to drive faster than 15 km/h; Drivers are not allowed to park their vehicle at locations that are not designated as parking spaces; and the area can be classified as disc zone parking (in Dutch: Parkeerschijfzone) (Overheid, 1990).

Since the Covid-19 pandemic, more and more people are dissatisfied with their living situation, according to Vastgoed Actueel (2020). Living space and gardens become significantly more important (Vastgoed Actueel, 2020) and people prefer to have a bigger living surface (Tekon Visie, 2021). Working at home during the Covid-19 pandemic is one of the causes of the shift in needs and demands regarding living preferences (RTL Nieuws, 2020). The residential

area/environment becomes increasingly important for individuals. They prefer a bigger house, more rooms (to be able to have your own office at home), and a bigger garden. The concept of ‘woonerf’ has a lot of benefits as well as critiques, but these do not outweigh the advantages (Steinberg, 2015). Possibly, the concept could be implemented more often again to fulfil people’s residential needs. A research gap is associated with academic relevance. In this study, a research gap has been found on living on a woonerf and happiness levels.

## **1.2 Research Problem**

Liveability is a potential contributor to higher subjective well-being (hereafter SWB) (Mouratidis, 2020a). Therefore, residential areas must be perceived as liveable. There are several ways to create liveable streets and neighbourhoods, and one of them is the concept of a ‘woonerf’ (Appleyard, 1980). However, liveability is not the only factor that contributes to SWB. There are several other indicators such as social cohesion, greenery, healthy environment, low traffic and life & residential/housing satisfaction. These indicators are also prevalent in the concept of the woonerf. According to Dudek (2019), woonerfs improve the quality of life of people significantly. This research aims to investigate whether there is a correlation between living at a woonerf and SWB. Therefore, the following research question has been formulated:

*“To what extent does living at a ‘woonerf’ in the city of Groningen influence subjective well-being?”*

The following sub-questions have been defined:

- What factors influence subjective well-being?
- What factors influence subjective well-being and are also prevalent within the concept of a woonerf?
- How do people perceive their living environment and what factors do they think contribute to their happiness?

## **1.3 Structure**

Firstly, a theoretical framework is established which includes the explanation of theories and concepts. Based on the literature, a conceptual model is conceived, and hypotheses are formulated. The mixed-methods approach is described in detail in the methodology section. It provides information on how the data is collected and analysed for both the quantitative and qualitative part of this research. Furthermore, the quality of the data gathered, and research ethics will be discussed. The results section presents both quantitative and qualitative results. It consists of the descriptive statistics from the collected data, corresponding regression analysis, and interview findings. Thereafter, the outcomes are compared to relevant theories and concepts. Finally, the main findings are summarized, the research questions answered and information on future research and recommendations is provided.

## 2. Theoretical Framework

### 2.1 Theories and concepts

Several relevant concepts relating to the concept of woonerf and could explain the potential relationship between living at a woonerf and SWB, are explained. These are based on the characteristics and definition of a woonerf.

The scientific term for both happiness and life satisfaction is SWB (Diener, 2021). SWB is impacted by internal and external factors. Personality is an example of an internal factor, and someone's living environment is an example of an external factor. Personal characteristics, social relation quality, living society and the ability for an individual to meet their own needs are the key factors that influence SWB (Diener, 2021).

Factors that influence the quality of life belong to the concept of liveability (Partners for Livable Communities, 2021). According to the Australian government (2012), there are physical, cultural and societal characteristics that contribute to liveability. Physical characteristics are land use, buildings, public spaces, recreational opportunities and nature. Societal characteristics are social capital, inclusion and social cohesion. Cultural characteristics are meanings that have been attached to, for example, places in a city. Liveability can be achieved by focussing on and understanding the needs of people in the built environment since that is connected to the quality of life (Gehl, 2010).

Satisfaction is "*the act of fulfilling (= achieving) a need or wish*" (Cambridge Dictionary, 2021). For this research, satisfaction has been divided into life satisfaction, housing/residential satisfaction, and satisfaction in residential area/environment. Satisfaction is needed to achieve happiness. However, life satisfaction and happiness are not the same. A frequently used tool to report life satisfaction is the 'Cantril Ladder', using a scale from 0 to 10. Important predictors of life satisfaction are income, economic growth, (mental)health, different life events, culture, freedom, and media (Ortiz-Ospina & Roser, 2017). Higher life satisfaction contributes to a higher SWB as well, since SWB is the scientific term for both happiness and life satisfaction (Diener, 2021).

One of the most important drivers of SWB is social contact (OECD, 2013). As a result, social contact with others is crucial and leads to higher social cohesiveness. Furthermore, social cohesion improves the SWB of an individual positively (Delhey & Dragolov, 2016). Woonerfs have social benefits and the satisfaction of residents living in such a street increases. There is more social interaction between people, causing a 'woonerf' to possibly contribute positively to social cohesion in a street (Ben-Joseph, 1995).

According to MacKerron & Mourato (2012), people's SWB is higher when they surround themselves with greenery. The link between well-being and factors related to the environment becomes increasingly important. In their research, they found that the participants are significantly happier outdoors in green areas or nature compared to urban areas. There is a strong link between nature and well-being, which strengthens the relationship between greenery and SWB (MacKerron & Mourato, 2013). Since woonerfs are known for their greenery, this is an important explanatory factor for the possible relationship between living on a woonerf and SWB. The Australian government (2012) also states that both greenery and low traffic contribute to higher liveability.

Overall, people that live in areas with regularly greater traffic levels are less happy (Hays et al., 2016). Woonerfs are known for their low traffic and traffic safety in the streets. They are designed to be an area where traffic safety is guaranteed so that the primary residential function is being preserved (Eenink, 2007).

According to the OECD (2013), housing quality is an important factor when measuring SWB. With regards to an individual's residential situation, Rudolf & Potter (2015) argue that housing (size and tenure) contributes to SWB. Oswald et al. (2003) argue that the housing circumstances of an individual and their perception of the subjective home environment, have a considerable impact on life satisfaction. Variables linked to this concept are the number of rooms, housing costs, specific quality aspects and household composition. Housing quality is one of the terms from the umbrella term 'material conditions' (OECD, 2013). A theory that can be linked to this is the 'Easterlin paradox': When household income rises, SWB becomes higher. When average incomes for a country rises it does not automatically mean an increase in the average country's SWB (OECD, 2013; Rudolf & Potter, 2015).

Perrée et al. (2020) state that urban public spaces affect people's SWB. Also, noise pollution and air pollution both have a significant negative influence on life satisfaction (OECD, 2013). In deprived neighbourhoods, neighbourhood satisfaction and well-being are lower (Mouratidis, 2020b), this can also be linked to an individual's well-being, and therefore to SWB. How people perceive their residential environment is important to investigate to see the possible relationship between living at a woonerf and SWB.

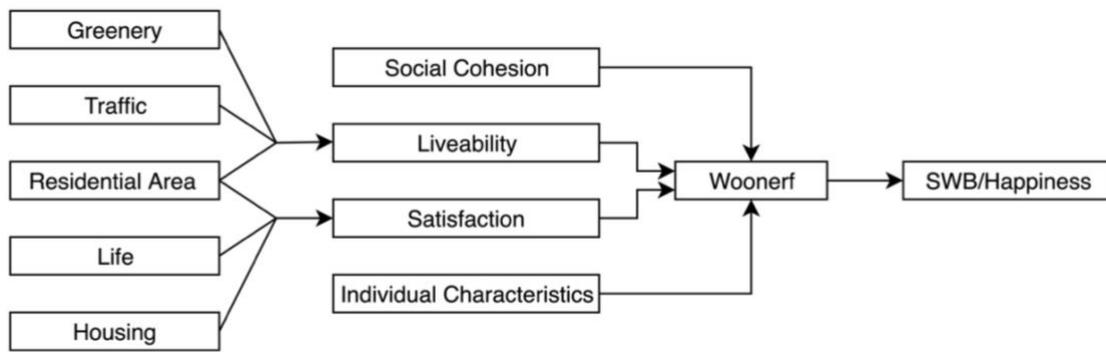
Besides contextual factors, personal factors such as individual characteristics and individual choices can explain levels of happiness. These individual characteristics can be characterised as demographic and socio-economic factors such as age, gender, employment and education (Kim-Prieto et al., 2005). People's residential and housing preferences are driven by individual characteristics and preferences, and housing influences individual well-being (Costa-Font et al., 2006). For example, young people between 18 to 30 years prefer low prices, access to public transport, safety, and distance to work or school. Older age groups, however, have other preferences such as green spaces, neighbourhood environment, and having a separate kitchen (Kim, 2020).

## **2.2 Conceptual Model**

The conceptual model in figure 1 depicts how the main concepts from the previous paragraph influence SWB. The conceptual model should be read from left to right. Factors on the left impact the primary concepts 'liveability' and 'satisfaction'. Liveability is influenced by traffic, greenery and residential area. Satisfaction is subdivided into life satisfaction, residential area satisfaction and housing satisfaction.

Social cohesion, liveability, satisfaction and individual characteristics could potentially explain the relationship between living at a woonerf and a potential higher level of SWB. In other words, the variable that is used to measure happiness.

Figure 1: Conceptual model (Conducted by author, 2021)



### 2.3 Hypotheses

The contextual concepts ‘social cohesion’ and ‘satisfaction’, as well as sub-concepts of ‘liveability’, have a positive influence on SWB. These concepts are also prevalent when analysing the concept of a ‘woonerf’. These contextual variables are expected to have a considerable impact on happiness concerning living on a woonerf. Furthermore, compositional effects, meaning effects on the individual level such as demographic and socio-economic factors, could potentially affect residential choices and subsequently SWB.

### **3. Methodology**

#### **3.1 Research methods**

This research uses a mixed-method approach by collecting both quantitative and qualitative data. Mixed methods research is useful since it provides the opportunity to look at different phenomena from different perspectives. Furthermore, it can be used to better understand relations and contradictions between qualitative and quantitative data, and it enlarges knowledge (Shorten & Smith, 2017; Molina-Azorin, 2016). The qualitative data collection consists of (in-depth) interviews as supporting and enforcing data for the quantitative data. Using the mixed methods approach the following research question is answered: “To what extent does living at a ‘woonerf’ in the city of Groningen influence subjective well-being?”. The quantitative research shows a positive or negative relationship between the independent variables and the dependent variable happiness. The qualitative data can be used as in-depth information to explain certain patterns, opinions and decisions of individuals, and therefore acts as additional explanatory data, complementary to the quantitative data.

##### **3.1.1 Quantitative data**

Questionnaires are used for the quantitative data collection, for which the responses are collected in the Hortusbuurt in the city of Groningen. To get a representative sample, the questionnaires were distributed among households in different streets that fit into one of the following three categories: 1) Woonerf, 2) Street similar to a woonerf but not characterized as such, and 3) Street completely different compared to category 1 and 2.

The primary data is collected and stored through a questionnaire made in Qualtrics. A total of 900 flyers with a link to the online questionnaire were put in mailboxes on April 8, 12 and 13, 2021. Flyers contribute to increasing the chance of getting enough respondents. Three hundred sixty-one flyers were distributed on woonerfs (category 1), 200 on streets that are similar (category 2) and 339 on streets that are completely different (category 3). Some streets were excluded, since these could either lead to sampling bias or they were characterized as a square. The result was a sample size of 180 respondents.

The questionnaire (Appendix A) contains general questions about the respondents and more in-depth questions on their living environment, housing situation, happiness, and satisfaction. The general questions about the respondents focus on demographic and socio-economic factors such as age, gender, education, primary occupation, income, household, and housing. The questions on general happiness and general satisfaction are ranked on a Likert scale from 0 to 10. The questions on residence satisfaction, residential environment, contact with neighbours, contact with other street residents, traffic and greenery are statements and also ranked on the Likert scale. The Likert scale included 5 answers ranging from ‘strongly disagree’ to ‘strongly agree’. The last question from the questionnaire is an open question meant for respondents who were interested in being interviewed for this research.

The following variables (table 1) were created from the questionnaire questions.

*Table 1: Variables quantitative research (Conducted by author, 2021)*

<b>Variable</b>	<b>Variable Label</b>	<b>Measurement type</b>
Age	The age of the respondent	Ratio
Gender	The gender of the respondent	Binary
Street category	The street name of the respondent	Nominal
Education	Highest education completed	Nominal
Primary occupation	Primary occupation of the respondent	Nominal
Income	Income of the respondent	Nominal
Housing tenure	Housing tenure of the respondent	Nominal
Living space	Number of square meters living space	Ratio
Type of house	Type of house of the respondent	Nominal
Household members	Number of people in the household	Ratio
Children in household	Number of children in household	Ratio
Life satisfaction	Overall life satisfaction	Ordinal
Happiness	Overall happiness	Ordinal
Residence satisfaction	Satisfaction on residence	Ordinal
Residential environment satisfaction	Satisfaction on residential environment	Ordinal
Contact neighbours	Statement: I have a lot of contact with my immediate neighbours	Ordinal
Contact street residents	Statement: I have a lot of contact with other street residents	Ordinal
Traffic	Statement: There is a lot of traffic in the street I am living in.	Ordinal
Greenery	Statement: There is enough greenery in the street I am living in.	Ordinal

### 3.1.2 Qualitative data

Three interviews were held to obtain more detailed information to explain and understand certain patterns, opinions, and decisions made by individuals. Two of the three interviews were people living on a woonerf and one interview was with someone who lives on a street that is similar to a woonerf. Table 2 contains the main characteristics of the interviewees. The interviewees filled in the questionnaire and indicated their interest in an interview. Since the data is supposed to supplement the quantitative data, a semi-structured interview guide (Appendix B) has been used. This interview format is also preferred because it allows for more flexibility. Specific topics can be addressed, and interviewees can also express their opinions on particular issues (Galetta, 2013).

*Table 2: Main characteristics interviewees (Conducted by author, 2021)*

	<b>Interviewee 1</b>	<b>Interviewee 2</b>	<b>Interviewee 3</b>
<b>Education</b>	University of Groningen	Training in gestalt therapy	Mathematics on a university level
<b>Primary occupation</b>	Municipality of Groningen	Drama lessons children, mailman and poetry	Drama lessons adults, mailman and poetry
<b>Street category</b>	2	1 (+ courtyard)	1 (+ courtyard)
<b>Housing tenure</b>	Rented flat	Social housing	Social housing
<b>Years living there</b>	A few years	17 years	21 years

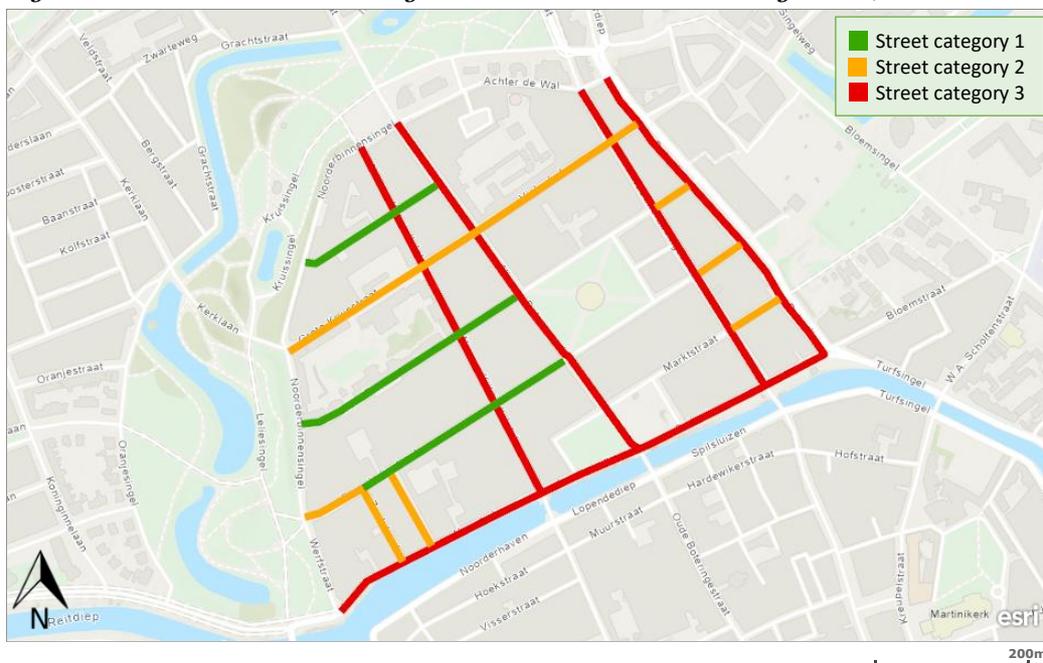
### 3.2 Study area

The Hortusbuurt is a neighbourhood in the city of Groningen. It is located north of the inner city and south of the Noorderplantsoen park. It is the first major urban expansion of the inner city of Groningen, dating back to the 17<sup>th</sup> century. During this expansion, the area was brought within city limits by putting new city walls which can still be seen in the current shape of the Noorderplantsoen. Both students and city residents live in the neighbourhood and shops and

restaurants are mostly located in the Nieuwe Ebbingestraat and Boterdiep (Hortusbuurt, 2008). In the Gronometer from the municipality of Groningen, the Hortusbuurt is part of the area Hortusbuurt-Ebbingekwartier. The area is characterized as a residential area since this is the main function. There are on average 32.4 houses per hectare, of which almost 30% is corporate ownership. Most residences are terraced houses, apartments or studios, and residents rate their house on average with a 7.5 on a scale from 1 to 10 (Gronometer, 2021).

The Geodienst from the University of Groningen provided information on how to locate woonerfs in the city of Groningen. Their suggestion was to use the application Overpass Turbo (2021) in combination with OpenStreetMap. In this application, OSM data was downloaded and with the use of the assistant function, the query tags 'highway=living\_street' and 'maxspeed=15' needed to be inserted to locate the woonerfs in the city of Groningen. The woonerfs in the Hortusbuurt are the 'Kleine and Grote Rozenstraat', 'Kleine and Grote Appelstraat' and 'Kleine and Grote Leliestraat'. The following map (figure 2) presents the study area 'Hortusbuurt'.

Figure 2: The Hortusbuurt neighbourhood with street categories (ArcGIS Online, 2021)



### 3.3 Data analysis methods

#### 3.3.1 Quantitative data

The data set used in the quantitative data analysis is derived from the questionnaire. Before beginning the analysis, a few adjustments were made. By subtracting the year of birth from 2021, the variable 'year of birth' becomes the variable 'age'. Furthermore, the variable street name is converted into a street category by assigning a category 1, 2 or 3-label to the streets.

Firstly, the 'Chi-Square' test is used to determine whether there is a statistically significant difference between the two distributions of 'happiness' (ordinal) and 'street category' (nominal). This test aims to investigate if there is a link between living on a woonerf and happiness.

For the second model, an ordinal logistic regression is used as a statistical test, see Appendix D for more details. The regression analysis is suitable for analysing the data to determine the

impact of multiple independent variables on a single dependent variable. The dependent variable ‘happiness’ is quantified on an ordinal Likert scale. To perform the regression analysis, several adjustments to the dataset were required to ensure that it was suitable for the regression analysis. These modifications included changing the nominal variables into dummy variables, in which one was left out to serve as the reference category. The variables that have been changed are ‘gender’, ‘street category’, ‘education’, ‘primary occupation’, ‘income’, ‘housing tenure’, and ‘home type’” The reference categories can be found in brackets next to the variable names in the regression analysis itself. In the regression analysis, ‘happiness’ is the dependent variable, and all other variables are the independent and control variables.

### 3.3.2 Qualitative data

Codes are used to analyse the interview transcriptions. Different codes have been clustered and sorted into categories and themes to be able to compare different experiences and to recognize similar patterns. The code tree in table 3 is used to do this.

*Table 3: Code tree (Conducted by author, 2021)*

<b>Category: Residence</b>
<b>Indicators:</b>
Satisfaction
Opinion
Dwelling/housing characteristics
Changes
Motives
Previous living situation
Living environment
Points of improvement
<b>Category: Street</b>
<b>Indicators:</b>
Living/residential environment
Opinion
The concept of Woonerf
Awareness
Experiences
Advantages
Disadvantages
Contact with neighbours
Contact with other residents
Liveability
Greenery
Social cohesion (neighbours and other street residents)
Points of improvement
<b>Category: Happiness / SWB</b>
<b>Indicators:</b>
The overall level of happiness
Contributing factors
Living environment

### **3.5 Ethical considerations**

Research ethics for the questionnaire are met by guaranteeing anonymity and voluntariness. The participant is not asked for their name and house number, location-specific data is not used, and the questionnaire could be stopped any time.

Research ethics for the interviews are met using an informed consent form (Appendix C), signed by both the participant and the interviewer beforehand. It has the advantage that participants are well informed about the research. The participant permits to record the interview and that the data can be used for the research. However, the participant always has the right to withdraw, the interview is voluntary. Furthermore, all names and addresses are replaced by fictitious alternatives and transcripts will not be added to the final paper.

The data from both the questionnaire and the interviews are handled carefully and confidential and will be deleted after finishing this research. It will not be used for further scientific research and is not made available to third parties.

A safe approach is used to reduce all risks with regards to Covid-19. Government rules and regulations are adhered to by keeping 1.5 meters distance and avoiding physical contact.

## 4. Results

### 4.1 Quantitative results

Table 4: Descriptive statistics (Conducted by author, 2021)

Variable	N	Mean	Minimum	Maximum	Standard Deviation
Age	142	38.4366	19	82	17.65929
Living space	145	78.37	11	350	63.582
Household members	150	2.56	1	9	2.038
Children in household	149	0.0872	0	3	0.38437
Happiness	150	7.5733	3	10	1.27098
Residence satisfaction	150	4.19	1	5	0.849
Residential environment satisfaction	145	4.41	1	5	0.731
Contact neighbours	149	2.82	1	5	1.069
Contact street residents	148	2.39	1	4	0.958
Traffic	150	2.95	1	5	1.206
Greenery	150	3.12	1	5	1.198

Table 4 shows the descriptive statistics for the variables with a ratio or ordinal measurement scale. For both the descriptive statistics as well as the regression analysis, there were no considerable outliers that needed to be taken out of the analysis.

### Chi-Square

Table 5: Chi-Square test (Conducted by author, 2021)

	Happiness	Street Category
Chi-Square	141.627 a	6.257 b
df	7	2
Asymp. Sig.	.000	.044

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 18.8.

b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 49.3.

The results from the Chi-Square test can be found in table 5. The test is significant, indicating that there is a statistically significant difference between the two distributions of 'happiness' and 'street category'.

**Regression analysis**

*Table 6: Ordinal Logistic Regression (Conducted by author, 2021)*

<b>Variable name (reference category)</b>	<b>Variable</b>	<b>Coefficient Estimate</b>	<b>Two-sided Significance</b>
<b>Thresholds</b>	<b>Happiness = 3</b>	<b>-4.581</b>	<b>.043**</b>
	<b>Happiness = 4</b>	<b>-4.163</b>	<b>.062*</b>
	<b>Happiness = 5</b>	<b>-3.172</b>	<b>.145</b>
	<b>Happiness = 6</b>	<b>-1.434</b>	<b>.504</b>
	<b>Happiness = 7</b>	<b>0.0363</b>	<b>.865</b>
	<b>Happiness = 8</b>	<b>2.765</b>	<b>.199</b>
	<b>Happiness = 9</b>	<b>5.796</b>	<b>.011**</b>
<b>Gender (Female)</b>	Male	0.277	.469
<b>Age</b>		-0.013	.546
<b>Children</b>		0.736	.263
<b>Living Space</b>		0.002	.690
<b>Household Members</b>		-0.227	.077*
<b>Satisfaction Residence</b>		0.734	.012**
<b>Satisfaction Residential Environment</b>		-0.121	.639
<b>Contact with neighbours</b>		-0.326	.125
<b>Contact with other street residents</b>		-0.176	.490
<b>Traffic</b>		-0.063	.768
<b>Greenery</b>		-0.0242	.191
<b>Street category (Different)</b>	Woonerf	0.825	.182
	Similar	1.025	.081*
<b>Education (University)</b>	Senior General Secondary	2.732	.015**
	Pre-university	0.389	.536
	Secondary Vocational	0.629	.428
	University of Applied Sciences	0.717	.115
	Other	-8.706	.013**
<b>Primary Occupation (Paid Job)</b>	Looking for new job	-1.667	.300
	Looking for first job	-2.480	.245
	Student	-0.210	.761
	Trainee	-2.570	.209
	Retired	1.772	.108
	Early retirement	0.099	.963
	Volunteer	1.375	.543
	Other	3.005	.004***
<b>Income (Less than 1000)</b>	Between 1000 and 2500	-0.842	.150
	Between 2500 and 5000	0.182	.826
	More than 5000	-0.993	.381
	Prefer not to say	2.689	.028**
<b>Housing tenure (Owner-Occupied)</b>	Rented	0.346	.620
	Social Housing	-0.798	.234
	Sub rented	-1.756	.209
	Free accommodation	-7.083	.003***
	Unknown	2.165	.324
<b>Type of house (Apartment)</b>	Terraced or corner	0.596	.320
	Semi-detached	3.080	.194
	Detached	2.628	.030**
	Business	3.134	.169
	Shared use	1.099	.106

*Note: \*Significant at 10% level; \*\* Significant at 5% level; \*\*\* Significant at 1% level*

Table 6 shows the results after performing the regression analysis. In this regression analysis, the coefficients for the categorical variables are relative to the reference category. A negative coefficient has a more negative effect on happiness compared to the reference category, not a more negative effect on happiness in general. The variables that have significant relations to happiness are: 'household members', 'residence satisfaction', 'street category 2 (similar to a woonerf)', 'senior general secondary education', 'other education', 'other primary occupation', 'income prefer not to say', 'free accommodation' and 'detached house'.

The variable 'household members' and 'street category similar' are significant on a 10% confidence interval, but insignificant when using a 5% confidence interval. The coefficient estimates for 'household members' is negative, which means that with every increase in household members, the level of happiness decreases. The coefficient estimates for 'street category similar' is positive, which is relative to the reference category street category 3 'different'. The positive coefficient has a more positive effect on happiness compared to the reference category, not a more positive effect on happiness in general.

'Residence satisfaction', 'senior general secondary education', and 'other education' are significant on a 5% confidence interval. Every increase in residence satisfaction increases happiness because of the positive coefficient estimate.

Senior general secondary education has a positive coefficient and other education has a negative coefficient. Both coefficients affect happiness compared to the reference category 'university'.

The variable 'other' is the only significant variable in the category primary occupation. It has a significant level of 0.004, therefore, it is significant on both 5% and 1% confidence intervals. The positive coefficient implicates that this has a positive effect on happiness compared to the reference category 'paid job'. Free accommodation is also significant on both 5% and 1% confidence interval with a negative coefficient estimate relative to the reference category 'Owner-occupied'. However, only 1 respondent answered that he or she lives in free accommodation, so this variable will be disregarded.

The variable income does not have significant variables, only the people that preferred not to say their income, relative to the reference category 'less than 1000'. It is significant on a 5% confidence interval and has a positive coefficient estimate. The same applies for the variable 'Detached house' which also significant on a 5% confidence interval and has a positive coefficient estimate, relative to the reference category 'apartment'. Living in a detached house has a positive effect on happiness compared to the reference category. Living space is insignificant in this model.

## **4.2 Qualitative results**

The key themes and findings that emerge from the qualitative analysis are social ability and social cohesion, Covid-19, satisfaction, liveability, disadvantages, accessibility to amenities and factors that influence happiness. Key themes are highlighted in the text below.

### **Neighbours**

Interviewee 1 had little contact with her neighbours, in the beginning. The conversations were mainly functional. Currently, she has more contact with her neighbours, and she likes the amount of contact. She does not know other people in her street, but it does not bother her too

much. Interviewee 2 and interviewee 3 are neighbours and friends, they write poems together. Interviewee 3 also mentioned that she is blessed with her direct neighbours because she is not bothered by them. Interviewee 3 has daily contact with the rest of the people in the courtyard. However, they do not undertake joint activities together or something similar.

### **Neighbourhood**

Interviewee 1 likes the neighbourhood she is living in. She describes it as lively, with a lot happening, where you can meet and see people, and there is a nice neighbourhood paper that she always reads faithfully. However, she does think that there is more mutual contact between residents in the neighbourhood than she experiences or perceives herself. For now, she is satisfied with regards to her living situation. Nevertheless, when she is going to settle down, she would like to move, because it would be too busy.

Interviewee 2 likes her house because it is quiet and calm, close to the inner-city. The ambience/atmosphere in the neighbourhood is something that the interviewee appreciates mainly because of the people. She is also very happy with her house because she does not care about luxury. She would like to move to Vinkhuizen to a corner house, but the only reason is to have a business at home. However, she also said: *“But yes, I don't want to leave this place. It is too nice to live here, close to the Forum, close to everything.”*

When interviewee 3 was asked about his residence and the residential environment he stated that it is small, but you are outside very quickly, and everything is nearby. Nevertheless, it is still noisy, cold, moist and you do not own a private garden. Interviewee 3 likes the people that live in the neighbourhood. The people living in the neighbourhood, who have similar interests, contribute to his happiness. He also mentioned that there live very few children in the area.

### **Woonerfs**

Interviewee 1's opinion on de woonerfs in the Hortusbuurt is that they are nice streets. She would consider living there later, or on a woonerf in general, because it is a bit quieter, but still in the city and neighbours have more contact. She saw neighbours on the woonerfs chatting together, so she concluded that they have more mutual contact. Her current living street could have more greenery, for example, gable gardens, flowerbeds, and trees. On the other hand, parks are fortunately close to her living area.

Interviewee 2 never sits outside in the common garden of the courtyard due to sensitivity. She does like the greenery in her street and neighbourhood, but the garden in her courtyard could have been made prettier, for example with roses to make it more romantic. According to interviewee 2, living with others and share the barn and garden are disadvantages of living in a courtyard, it is very packed together and there is too little privacy.

Interviewee 3 lives in a courtyard at a woonerf and according to him, living right next to each other is a disadvantage of his residence. He says that he is now used to the little privacy. The advantages of living there are that it can be very cosy, the quietness and no traffic except for the pizza deliverer from Thuisbezorgd. Living here in his opinion *“has advantages and it has disadvantages, well that's everywhere.”* and *“of course there is a difference between living at a courtyard or woonerf or above the Albert Heijn in the Nieuwe Ebbingestraat.”*

### **Traffic**

Interviewee 1 describes her street as quiet. She thinks that streets such as Boterdiep and Nieuwe Ebbinge are too busy and would not like to live there. Interviewee 2 said that no traffic contributes to her happiness and interviewee 3 also stated that the fact that he does not hear the cars contributes to his level of happiness.

### **Happiness**

Without the Covid-19 pandemic, interviewee 1 would be very happy, but she feels limited in her actions by the government's measurements. The fact that her house has a lounge and dining area influences her happiness positively since she values eating with friends and playing games. Another factor that influences her happiness is her living environment. Less greenery and living in the middle of nowhere would make her unhappy because she would feel limited.

Interviewee 2 is very satisfied with her life; she gives happiness and life satisfaction a 9 or even a 10. She also thinks that their living environment (greenery, traffic, neighbours, contact) influences this positively. She likes the silence in the neighbourhood but also the Nieuwe Kerk: *"I became so happy there and I am happy every day to see that beautiful building."* She always lived in old houses which she likes, houses like blocks boxes would make her unhappy.

Interviewee 3 grades his happiness with a 7 or an 8 and added to it that there is always something to complain about. However, the fact that he already lives here for 21 years, says in his opinion enough about how his living environment influences his level of happiness. If he would live somewhere else, it would not make him less happy, it depends on where and how he would live.

### **Factors that influence happiness**

According to interviewee 2, the most important factors that contribute to happiness are beauty, greenery, no traffic, and people with similar interests.

Interviewee 1 said at the end of the interview that a lively environment and social interaction are important, greenery needs to be close and there need to be enough services. The stage of life is important according to her. At the end of the interview, she said that nothing would stop her from moving to a woonerf. She thinks that she would be happier when she would live at a woonerf: *"It has a completely different feeling, and it feels more cheerful. It has more life in it, so I think that if I lived in that street, it feels more at home. When I walked through it, I thought that the people who live here, really live very nice."*

## **4.3 Discussion**

Mean happiness in the Hortusbuurt is 7.5733, which is slightly lower compared to the Dutch average of 7.704 (CBS, 2018). The mean number of household members in the Hortusbuurt is 2.56 which is slightly higher compared to the Dutch average of 2.14 (CBS, 2021). The number of children in the household is less than 1, however, only 8 respondents indicated that they have children in their household. A possible explanation could be selection bias, in which the research fails to achieve appropriate randomization. Another explanation for the differences in the average level of happiness is the numerous developments since 2018, for example, the Covid-19 pandemic. According to I&O Research (2021), half of the Dutch inhabitants feel less happy compared to a year ago.

### **Demographics, Household and Children**

According to Kim-Prieto et al. (2005), individual characteristics can explain levels of happiness, as well as an individual's choices. These individual characteristics can be characterised as demographic and socio-economic factors such as age and gender. In this regression analysis, both age and gender are insignificant. A possible explanation for age being insignificant could be that there is no linear relationship between age and happiness.

Oswald et al. (2003) stated that household composition contributes to life satisfaction, this is also visible in the regression analysis, with a significant variable 'household members'. The number of children is insignificant in the model. However, this may be caused by the low amount of household with children in the neighbourhood. This claim is also supported in the qualitative research by interviewee 3.

### **Street, Satisfaction residence and satisfaction residential environment**

Higher satisfaction contributes to a higher SWB (Diener 2021). The literature can be partly supported by the founded results since residence satisfaction is significant in the statistical model. Satisfaction residential environment is not significant in this model. A possible explanation for this variable not being significant and residence satisfaction being significant could be because of multicollinearity. Someone happy with their residence is often also happy with the living environment. Street similar to a woonerf is significant on a 10% confidence interval. The statistical model did not show a significant relationship on the variable woonerf. However, all interviews indicate that living in a woonerf and a residential environment positively influence happiness and that living on a busy street has a negative impact.

### **Education, Primary Occupation and Income**

Only 'Senior General Secondary Education' and 'Other' are significant within the category 'education'. For the category 'primary occupation', only the variable 'other' is significant.

Individual characteristics can explain levels of happiness which can be characterised as demographic and socio-economic factors for example employment and education (Kim-Prieto et al., 2005). The regression analysis shows to a low extent, the relationship between primary occupation and education with happiness.

People that preferred not to tell their income is the only significant variable within income. Potentially, poor people are ashamed of their income or people with a high income do not want to share their income. According to the literature, SWB becomes higher when household income rises (Rudolf & Potter, 2015). This is partly in contract with the outcomes of the regression analysis. A possible explanation could be that income does not have a linear effect on happiness. The interviews do not show that education, primary occupation and income influence their level of happiness.

### **Housing characteristics**

With regards to housing tenure, only free accommodation is significant. The only variable that is significant within 'type of house' is 'detached'. Rudolf & Potter (2015), argue that housing size and housing tenure both contribute to an individual's SWB, which partly appears in the regression analysis. The interviews do not show that housing characteristics influence the level of happiness, rather their residential environment.

### **Contact, Traffic and Greenery**

According to the OECD (2013), an important driver of SWB is social contact. Cohesion increases an individual's SWB (Delhey & Dragolov, 2016). According to Ben-Joseph (1995), there is more social interaction between neighbours on a woonerf. The results for contact with neighbours and contact with other street residents are insignificant and therefore in contrast with the literature. Nevertheless, the qualitative research shows that all participants think that social contact and surrounding people do contribute to their level of happiness positively. Hays et al. (2016) stated that people living in areas with more traffic have lower overall happiness. The literature cannot be supported with the quantitative research because the variable on traffic is insignificant. The same applies to greenery, MacKerron and Mourato (2013), found out that people are significantly happier outside in green areas, or nature compared to urban areas. This is not confirmed in this statistical model, since the variable for greenery is insignificant. However, the qualitative research does show that people perceive both greenery and less traffic as a positive factor upon their level of happiness, similar to the literature.

## 5. Conclusions

### 5.1 Reflection on the research process

The research process went well with no major setbacks and difficulties to report. Different situations were considered, such as when the number of responders to the questionnaire was insufficient or lack of people willing to participate in an interview. This was fortunately not the case due to the amount of time, energy and effort that was put into obtaining respondents. Moreover, neither the literature research nor the thesis writing process contained any setbacks.

### 5.2 Findings

This thesis used a mixed-methods approach to find out whether living on a woonerf has an impact on SWB in the city of Groningen. The research question was: *“To what extent does living at a ‘woonerf’ in the city of Groningen influence subjective well-being?”*

According to the literature, multiple factors influence SWB, for example, demographic and socio-economic, social contact, liveability, greenery, low traffic, residential environment, housing characteristics and residential (environment) satisfaction. The majority of these factors are abundant on a woonerf, particularly greenery, social contact/cohesion, low amounts of traffic and high satisfaction in the residential environment.

Both quantitative and qualitative research has been carried out to answer the second and third sub-question and subsequently, combined with the literature, an answer to the main research question. The variables in both studies were chosen based on existing literature. The findings show that contact with street residents influences happiness, as well as the number of household members and residence satisfaction. Education and housing characteristics influence happiness to some extent, this confirms the already existing literature. However, the relationship between happiness and the main factors prevalent on a woonerf such as social cohesion, more greenery and less traffic does not emerge from the quantitative research completely. Qualitative research shows that factors such as greenery, less traffic and more social contact influence people’s happiness which is in line with the already existing literature. Therefore, based on the literature, qualitative, and quantitative research, there can be concluded that people are happier in streets with more greenery, less traffic and higher social cohesion, but this street does not necessarily need to be a woonerf. However, based on what is stated above, the assumption can be made that people living on a woonerf are happier.

Potential weaknesses of this research include a sample size that, although it already consists of enough responses, could have been bigger to make it even more accurate. Furthermore, the sample size may not be representative since it is a random sample but there might be response bias. Some people are more likely to respond than others for example when this person has more time to fill in the questionnaire. Another aspect that could be a limitation is that not all woonerfs in the entire Netherlands are researched nor all woonerfs in the city of Groningen. Given this, only inferences can be made based on the Hortusbuurt neighbourhood. Other neighbourhoods have other factors which might not be considered in the Hortusbuurt. More resources could have resulted in research on a larger scale which would provide different insights. The last limitation is the difficulties in measuring well-being. There can be argued that it is not easy to measure and there might be better ways to measure it compared to the methodology used in this research.

### **5.3 Recommendations**

To expand the scope of the quantitative study, future research is needed. This allows for more questions and more detailed and precise questions to be addressed on each aspect, in particular social cohesion, greenery and traffic. Another suggestion is to research various neighbourhoods and woonerfs across the country to see whether the same patterns and outcomes are visible in different types of neighbourhoods.

This research, as well as future research, can be used for example in planning and development departments of municipalities or consultancy firms. People's (subjective) well-being and overall happiness are becoming increasingly important, and anticipation of their desires and needs is needed to stimulate their well-being positively. Given this, combined with the emerging housing crisis, policy adjustments are required to ensure that they are future-proof.

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## 7. Appendices

### Appendix A: Questionnaire

#### Geography of Happiness

Thank you for participating in this research on the Geography of Happiness. This research is part of the Bachelor Thesis for the Bachelor Program 'Human Geography and Planning' from the Faculty of Spatial Sciences at the University of Groningen. Filling in the survey takes around 5 minutes, it is completely voluntary, your answers are anonymous, and you can stop the survey any time you want. You can leave a question blank if you do not wish to fill it in. The data from the survey will be handled carefully and after analyzing the data, it will be deleted. The data will not be used for further scientific research and will not be made available to third parties. If you have any further questions about the questionnaire and/or the research itself, you can send me an email: [r.c.l.den.boer@student.rug.nl](mailto:r.c.l.den.boer@student.rug.nl)  
Another language can be chosen top right on this page. Een andere taal kan rechtsboven op deze pagina worden gekozen.

What is your year of birth?

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What is your gender?

- Male (1)
- Female (2)
- Other (3)
- Prefer not to say (4)

What is your street name? Without house number

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What is your highest level of education completed?

- (continued) Special education (1)
- Kindergarten/primary education (2)
- Pre-vocational secondary education (3)
- Senior general secondary education (4)
- Pre-university education (5)
- Secondary vocational education (6)
- University of Applied Sciences (7)
- University (8)
- Did not have education (yet) (9)
- Other (10) \_\_\_\_\_

What do you consider to be your primary occupation?

- Paid job (1)
  - Looking for a job after having lost my former job (2)
  - Looking for first-time work / looking for work after having been without a job for a long time (3)
  - Student (4)
  - Trainee (5)
  - Work in my own household (6)
  - Retired, living off interest-yielding investments (7)
  - Early retirement (8)
  - (partially) Disabled (9)
  - Unpaid work, keeping my benefit payments (10)
  - Work as a volunteer (11)
  - Other (12) \_\_\_\_\_
- 

What is your net income per month?

- Less than €1000,- (1)
  - € 1.000 to € 2.500 (2)
  - € 2.500 to € 5.000 (4)
  - € 5.000 or more (6)
  - Prefer not to say (7)
-

In what type of housing tenure do you live?

- Owner-occupied property (1)
  - Rented house/flat (2)
  - Social housing (3)
  - Sub-rented house/flat (4)
  - Free accommodation (5)
  - Unknown (6)
- 

How many square meters is your living space approximately?

\_\_\_\_\_

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In what type of home do you live?

- Flat, apartment, multi-story house, upstairs or downstairs apartment (1)
  - Terraced house or corner house (2)
  - Semi-detached house (3)
  - Detached house (4)
  - Farm, house with horticultural business (5)
  - House with separate shop, office, practice or business space (6)
  - Housing unit with shared use of kitchen or toilet (7)
  - Different type of housing (8) \_\_\_\_\_
-

How many household members does your household have? Including yourself and any children or housemates.

- 1 (1)
  - 2 (2)
  - 3 (3)
  - 4 (4)
  - 5 (5)
  - 6 (6)
  - 7 (7)
  - 8 (8)
  - 9 or more (9)
- 

How many children are there in the household you live in?

- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- 6 (7)
- 7 (8)
- 8 (9)
- 9 or more (10)

How satisfied are you with your life as a whole?

Extremely dissatisfied                      Extremely satisfied  
 0   1   2   3   4   5   6   7   8   9   10

Satisfaction ()	
-----------------	--

Taking all things together, how happy would you say you are?

Extremely unhappy                      Extremely happy  
 0   1   2   3   4   5   6   7   8   9   10

Happiness ()	
--------------	--

How satisfied are you with your residence and residential environment?

	Very dissatisfied (1)	Dissatisfied (2)	Neither nor satisfied (3)	Satisfied (4)	Very satisfied (5)
Residence (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Residential environment (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

To what extent do you agree with the following statements?

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
I have a lot of contact with my immediate neighbours (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a lot of contact with other street residents (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a lot of traffic in the street I am living in (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is enough greenery in the street I am living in (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would like to interview you for my research. If you agree on this, could you fill in your email address?

\_\_\_\_\_

## Appendix B: Interview Guide in English

Information about the research will be on the Informed Consent Form.

### Before the start of the interview:

- Have a social conversation (Introduce myself and chit chat)
- Inform participant about the research and interview (also about recording the interview)
- Inform participant about his/her rights and ethics
- Inform participant what I will do with the obtained material from the interview
- Sign the informed consent
- Thank the participant in advance

### Opening questions

- Can you tell me something about yourself? (Examples: age, work/profession, family, hobbies)
- Can you tell something about whom you are living with? (And what are their ages?)
- Can you tell me something about the area that you are living in?
- If applicable: Would you like to tell something about your partner and/or you and your partner?
- If applicable: Would you like to tell something about your children?

### Core Questions

#### Topics

- Education
- Primary occupation
- Street
- Housing characteristics
- Household, children
- Living environment
- Satisfaction
- Contact with neighbours and other street residents
- Traffic and greenery
- Happiness and contributing factors

#### Residential

- Can you tell me something about the street you are living in?
  - How long do you live in this neighbourhood/street?
  - Where have you been living before?
  - Do you like your street/neighbourhood? Why / why not?
  - Why did you choose to move here? What was the reason that you choose this street or house?
- Can you tell me something about the house you are living in?
- If you could live somewhere else, what would be the requirements of the street/neighbourhood/city/house?
- If you could make some changes to your living environment, what would you change?
- How would you rate your level of satisfaction regarding your residential area?

#### Woonerf

- What do you know about the concept 'woonerf'? Are you aware of the fact that you live on a woonerf?
- Would you like to live there?
- How would you describe the contact with your neighbours and other people living in your street?
- Would you characterize your street as liveable? Why or why not?
- What do you think of the amount of greenery and social cohesion in your street?
  
- How do you experience living at a woonerf?
- What are, in your opinion, the advantages and disadvantages of living at a woonerf or from the woonerf itself?

#### Happiness / Subjective well-being

- How is your overall level of happiness? Are you happy?
- What factors contribute to your level of happiness?
- Do you think that your living environment/living on a woonerf affects your level of happiness?

### Closing

- Explain the topics mentioned at the beginning of the interview
- Summarize the interview
- What did you think of this interview?
- Do you have anything to add to this interview?
- Do you have any questions or comments?
- Thank the participant again

## Appendix C: Informed Consent Form

### Informatie Scriptie 'Happy living'

Mijn naam is Roos den Boer en voor mijn Bachelor Scriptie voor de bachelor 'Human Geography and Planning' (Sociale Geografie en Planologie), van de Faculteit Ruimtelijke Wetenschappen aan de Rijksuniversiteit Groningen, doe ik onderzoek naar de geografie van geluk. Dit onderzoek doe ik aan de hand van een vragenlijst en interviews om dieper in te gaan op bepaalde onderwerpen.

### Toestemmingsformulier scriptie interviews

Ik heb de informatie (hierboven) over de scriptie en het onderzoek gelezen. Ik kon vragen stellen en mijn vragen werden naar tevredenheid beantwoord. Ik had genoeg tijd om te besluiten mee te doen aan het onderzoek. Mijn deelname is geheel vrijwillig. Ik kan me op elk moment terugtrekken uit het onderzoek, zonder dat ik een reden hoeft op te geven. Ik geef toestemming voor het opnemen van het interview en het gebruik van de interview data voor educatieve doeleinden. De gegevens worden zorgvuldig en vertrouwelijk behandeld, geanonimiseerd en niet ter beschikking gesteld aan derden. De gegevens worden verwijderd het analyseren van de desbetreffende data. Ik ga ermee akkoord om deel te nemen aan dit interview.

Datum en handtekening van de deelnemer.

Datum: \_\_\_\_\_

Handtekening: \_\_\_\_\_

Ik verklaar dat ik de deelnemer heb geïnformeerd over het onderzoek. Ik zal de deelnemer informeren over zaken die zijn / haar deelname aan het onderzoek kunnen beïnvloeden.

Datum en handtekening van onderzoeker.

Datum: \_\_\_\_\_

Handtekening: \_\_\_\_\_

## Appendix D: SPSS Syntax

\* Encoding: UTF-8.

```
COMPUTE Children_New=Children - 1.
```

```
VARIABLE LABELS Children_New 'How many children in the household?'
```

```
EXECUTE.
```

```
COMPUTE Age=2021 - Birth.
```

```
VARIABLE LABELS Age 'What is the age of the respondent?'
```

```
EXECUTE.
```

```
compute female = (Gender = 2).
```

```
compute male = (Gender = 1).
```

```
compute Woonerf = (Streetname = 1).
```

```
compute Similar = (Streetname = 2).
```

```
compute Different = (Streetname = 3).
```

```
compute Senior_Secondary = (Education = 4).
```

```
compute Pre_University = (Education = 5).
```

```
compute Secondary_Voc = (Education = 6).
```

```
compute University_Applied = (Education = 7).
```

```
Compute University = (Education = 8).
```

```
Compute Other_Education = (Education = 10).
```

```
compute Paid_Job = (Primary_occupation = 1).
```

```
compute Looking_New_Job = (Primary_occupation = 2).
```

```
compute Looking_First_Job = (Primary_occupation = 3).
```

```
compute Student = (Primary_occupation = 4).
```

```
compute Trainee = (Primary_occupation = 5).
```

```
compute Retired = (Primary_occupation = 7).
```

```
compute Early_Retirement = (Primary_occupation = 8).
```

```
Compute Volunteer = (Primary_occupation = 11).
```

```
compute Other_Occupation = (Primary_occupation = 12).
```

```
compute less_1000 = (Income = 1).
```

```
compute between1000_2500 = (Income = 2).
```

```
compute between2500_5000 = (Income = 4).
```

```
compute more_5000 = (Income = 6).
```

```
compute prefer_not_to_say = (Income = 7).
```

```
compute Owner_occupied = (Housing_tenure = 1).
```

```
compute Rented = (Housing_tenure = 2).
```

```
compute Social_housing = (Housing_tenure = 3).
```

```
compute Sub_rented = (Housing_tenure = 4).
```

```
compute Free_accomodation = (Housing_tenure = 5).
```

```
compute Unknown = (Housing_tenure = 6).
```

```
compute Apartment = (Home_type = 1).
```

```
compute Terraced_Corner = (Home_type = 2).
```

```
compute Semi_detached = (Home_type = 3).
```

```
compute Detached = (Home_type = 4).
```

```
compute Business = (Home_type = 6).
```

```
compute Shared_use = (Home_type = 7).
```

```
compute Different_housing = (Home_type = 8).
```

EXECUTE.

```
DESCRIPTIVES VARIABLES=Living_space Household Happiness_1 Satisfaction__1  
Satisfaction__2 Likert_1  
Likert_2 Likert_3 Likert_4 Children_New Age  
/STATISTICS=MEAN STDDEV MIN MAX.
```

NPAR TESTS

```
/CHISQUARE=Happiness_1 Streetname  
/EXPECTED=EQUAL  
/MISSING ANALYSIS.
```

```
PLUM Happiness_1 WITH male Age Children_New Living_space Household Satisfaction__1  
Satisfaction__2
```

```
Likert_1 Likert_2 Likert_3 Likert_4 Woonerf Similar Senior_Secondary Pre_University  
Secondary_Voc
```

```
University_Applied Other_Education Looking_New_Job Looking_First_Job Student  
Trainee Retired
```

```
Early_Retirement Volunteer Other_Occupation between1000_2500 between2500_5000  
more_5000
```

```
prefer_not_to_say Rented Social_housing Sub_rented Free_accomodation Unknown  
Terraced_Corner
```

```
Semi_detached Detached Business Shared_use Different_housing
```

```
/CRITERIA=CIN(95) DELTA(0) LCONVERGE(0) MXITER(100) MXSTEP(5)
```

```
PCONVERGE(1.0E-6) SINGULAR(1.0E-8)
```

```
/LINK=LOGIT
```

```
/PRINT=FIT PARAMETER SUMMARY.
```